

A TAXONOMIC REVISION OF THE GENUS *VITICIPREMNA* H.J. Lam (VERBENACEAE)*

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Abstract

A taxonomic revision of *Viticipremna* is presented. The following five species are recognised: *V. tomentosa* Munir, *V. queenslandica* Munir, *V. vitilevuensis* Munir, *V. philippinensis* (Turcz.) H.J. Lam and *V. novae-pommeraniae* (Warb.) H.J. Lam. *V. tomentosa* (from Papua New Guinea), *V. queenslandica* (from Australia) and *V. vitilevuensis* (from Fiji) are described as new. The latter two are respectively the first representative species of this genus from Australia and Fiji. The genus and the type species are typified.

The affinities and distribution are considered for the genus and each species, a key to the species is provided and a detailed description of each species is supplemented by a habit sketch of a flowering branch and analytical drawings of the flowers.

Taxonomic History of the Genus

The genus *Viticipremna* was established by Lam (1919), and two species were recorded, viz. *V. turczaninowii* and *V. novae-pommeraniae*. It was referred to the family Verbenaceae where it was placed in the subfamily ("tribe") Viticoideae, tribe ("subtribe") Viticeae. This position was accepted by Moldenke (1959, 1971, 1980). Merrill (1923), however, relegated *Viticipremna* to synonymy in *Vitex* and remarked that he could see no valid reason for recognising the genus *Viticipremna*. In March, 1951, however, Merrill annotated one of Cuming's collections in the BM as the type of *Viticipremna*. Airy Shaw (1973) recorded this genus in the family Verbenaceae, without reference to any subfamily or a tribe. In 1982, Moldenke recorded *Viticipremna* in the synonymy of *Vitex* without any comment. Up to the present revision, only the two (syntype) species were recognised in the genus. Most collections belonging to this genus have been identified as *Vitex* species.

VITICIPREMNA H.J. Lam

Viticipremna H.J.Lam, Verben. Malay. Archip. (1919) 162; Bull. Jard. Bot. Buitenz. 3, 3 (1921) 47; Mold., Résumé Verben. etc. (1959) 409; Fifth Summary Verben. etc. 2 (1971) 758; Airy Shaw, Willis' Dict. Fl. Pl. & Ferns edn 8 (1973) 1214; Farr et al., Index Nom. Gen. Pl. 3 (1979) 1852; Mold., Sixth Summary Verben.etc. (1980) 460; Phytologia 50, No.4 (1982) 267, as syn. of *Vitex*; Phytologia 51, No. 4 (1982) 246, as syn. of *Vitex*.

Lectotype: *V. philippinensis* (Turcz.) H.J. Lam, Bull. Jard. Bot. Buitenz. 3, 3 (1921) 47, lectotype designated here.

Vitex auct. non L.: Merr., Enum. Philip. Fl. Pl. 3 (1923) 398 p.p., quoad *V. turczaninowii* Merr.

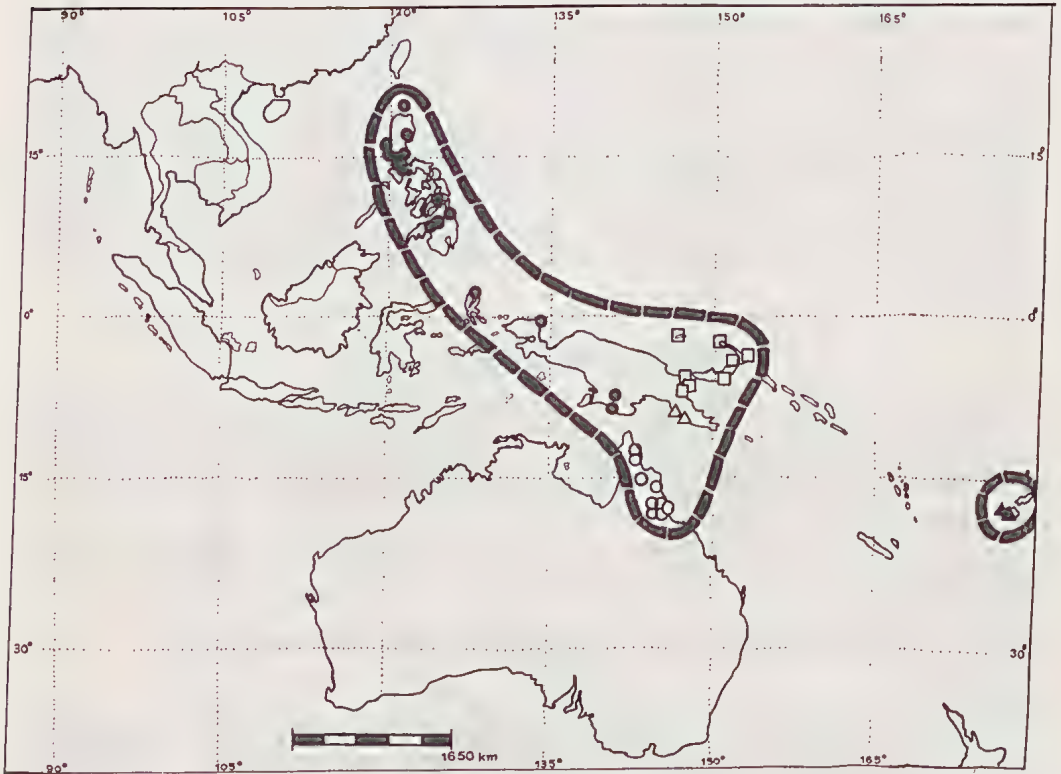
Typification

Lam (1919) included two species in the genus *Viticipremna*, viz. *V. turczaninowii* (Merr.) H.J.Lam (later renamed as *V. philippinensis* (Turcz.) H.J. Lam) and *V. novae-pommeraniae* (Warb.) H.J. Lam. Since the author did not choose a type, it is necessary to select a lectotype. Of the two syntypes, *V. philippinensis* is based on an older valid name. It is more widespread and in all major characteristics a better representative of *Viticipremna*. It is, therefore, selected here as the lectotype for this genus.

*The present treatment of the genus *Viticipremna* is the fourth in the series of taxonomic revisions in the family Verbenaceae (See Munir, 1982, 1984, 1984a).

Tall shrubs or trees. *Stem* and branches almost terete or vaguely quadrangular. *Leaves* digitately compound, decussate, exstipulate, petiolate; leaflets 3-6 (-7), reticulate-veined, uncostate, usually petiolulate. *Inflorescence* terminal, cymose, compound and often much branched, pedunculate. *Flowers* complete, zygomorphic, bisexual. *Calyx* of 4 sepals, persistent, accrescent, tubular, truncate or shortly 4-dentate. *Corolla* of 4 fused petals, deciduous, tubular below, sub-bilabiate above, the upper lip usually entire, the lower lip 3-lobed with the middle lobes larger, with a villous band in tube. *Stamens* 4, didynamous, alternate with the corolla-lobes, inserted inside the corolla-tube; filaments filiform, glabrous; anthers dorsifixed, oblong or elliptic, 2-lobed, lobes longitudinally dehiscent. *Ovary* bicarpellary, syncarpous, 4-locular, with one ovule in each cell attached to an axile placentation at or above the middle; style filiform, with 2 short stigmatic lobes. *Fruit* a small globose succulent drupe, with a hard 4-celled undivided pyrene. *Seeds* exalbuminous.

Number of species: 5.



Map 1. Distribution of the genus *Viticipremna* H.J. Lam ————
V. novae-pommeraniae □; *V. philippinensis* ●; *V. queenslandica* ○; *V. tomentosa* △; *V. vitilevuensis* ▲

Derivation of Name

The generic name is derived from *Vitex* and *Premna*. The digitate leaves of *Vitex* and 4-lobed corolla of *Premna* are the characteristics of this genus.

Distribution (Map 1)

The genus *Viticipremna* is distributed in Malesia, Melanesia and north-eastern Australia. In Malesia, it has been recorded from the Philippine Islands, Moluccas, Irian Jaya, Papua New Guinea, Admiralty Islands, Bismarck Islands, New Britain and New Ireland. In Australia, it has been recorded from the coastal regions of northern Queensland north of 20°S latitude. Beside the above distribution range, the genus has now been recorded from Fiji in Melanesia.

In addition to the accepted range of distribution, Moldenke (1959, 1971, 1980) and Airy Shaw (1973) recorded this genus from Java, Moldenke (1980) from Kalimantan and Lam (1919) from New Zealand. During present investigations, however, no representative of *Viticipremna* was found to occur in any of these areas. The occurrence of this genus in New Zealand was not reported by Allan (1961). In fact, the family Verbenaceae in New Zealand is represented by only two genera, *Vitex* L. and *Teucrium* Hook.f., each with one species.

Comments

In the protologue of this genus, Lam (1919) made the following remarks: "We based the present genus upon 2-lobed corolla, which is a characteristic of *Premna*, and the digitate leaves, which are a feature of *Vitex*. Moreover, the throat of the corolla is villous before the upper instead of before the mid-lobe of the lower lip. Yet we conceive, that it may be a doubtful one, since the possibility exists that it may be either a hybrid of *Premna* and a *Vitex* species, or a variation of the latter genus".

The mention of a "2-lobed corolla" seems to be a printing mistake, because elsewhere the author mentioned the number of corolla-lobes as 4. The position of villous hairs in the corolla-throat is found to be opposite to the above expressed view. In fact, the corolla-throat is found to be villous in front of the mid-lobe of the lower lip instead of before the upper lip. This particular character, however, is found only in *V. vitilevuensis* and *V. novae-pommeraniae*, though all *Viticipremna* species do have a villous band of hairs inside the corolla-tube.

Lam (1919) considered this genus as a possible hybrid of a *Premna* and a *Vitex* species, or a variation of the latter genus. He did not, however, name any species which may have cross-bred to produce a hybrid. Subsequently, Lam (1921) made comments on both type species and said: "So we think that the genus really is a good one". During present investigations, a range of specimens of each *Viticipremna* species have been examined, and the consistent combination of the following characters was found: Leaves composed of digitate leaflets; calyx-tube 4-toothed to almost truncate; corolla distinctly 4-lobed; stamens didynamous, epipetalous; ovary bicarpellary, syncarpous, with a filiform style and a short bifid stigma. Of these, the leaf-character is that of *Vitex*, calyx and corolla of *Premna*, and stamens, style and ovary common between these genera. The consistent combination of these characters, however, is exclusive to *Viticipremna*, and it has been accepted here as a distinct genus; and its affinities are as follows.

Affinities

Viticipremna is closely related to *Vitex* in its leaves being digitate; calyx persistent and accrescent; corolla-tube short, cylindrical, villous inside; stamens 4, didynamous; style with short bifid stigma; fruit a drupe with one 4-celled pyrene. Nevertheless, *Viticipremna* may easily be distinguished by its 4-lobed corolla and calyx truncate or obsoletely 4-denticulate. *Viticipremna* is also related to *Premna* in having a more or less similar shaped inflorescence composed of cymes; corolla 4-lobed, tube cylindrical and villous inside; stamens 4, didynamous; style with 2 short stigmatic lobes; fruit a succulent drupe with a hard 4-celled undivided pyrene. However, *Premna* can be readily identified by its simple leaves.

Key to the Species

- 1a. Leaflets densely tomentose below, pubescent above; cymes sessile or almost so and arranged in distant verticillate clusters along the rachis; middle lobe of the lower corolla-lip villous on the inner surface . . . 1. *V. tomentosa*
- b. Leaflets glabrous; cymes pedunculate, arranged in more or less lax pyramidal panicles; middle lobe of the lower corolla-lip glabrous, glandular-puberulous or villous on the inner surface 2
- 2a. Stamens and style much exerted beyond the corolla-lobes; ovary non-glandular 4
- b. Stamens and style included or almost so; ovary glandular 3
- 3a. Calyx glabrous but glandular outside, 4-lobed at the top, more or less 2-lipped; corolla-tube more or less twice the length of calyx, anterior corolla-lobe glandular-puberulous on the inner surface 2. *V. queenslandica*
- b. Calyx pubescent and glandular outside, truncate, not lipped; corolla-tube scarcely longer than calyx, anterior corolla-lobe villous on the inner surface 3. *V. vitilevuensis*
- 4a. Leaflets lanceolate to narrowly elliptic-lanceolate, cuneate at base; stamens inserted in the middle part of the corolla-tube; corolla-lobes glabrous inside at the base 4. *V. philippinensis*
- b. Leaflets ovate, ovate-oblong or ovate-lanceolate, unequally obtuse or subtruncate at base; stamens inserted in the upper part of the corolla-tube; anterior corolla lobe villous inside at the base 5. *V. novae-pommeraniae*

1. *Viticipremna tomentosa* Munir, sp. nov.

Frutex vel arbor parva (1.5-) 4-7 (-9) m alta. Truncus dense pubescentio-tomentosus ubi juvenis. *Folia* 3-5-foliolata; foliola elliptica vel elliptico-lanceolata, integra, supra pubescentia, subtus tomentosa, sessilia vel breviter petiolulata, (3.5-) 5-12 (-17.5) cm longa, (2-) 3.5-5 (-6.5) cm lata; petioli tomentosi, glandiferi. *Inflorescentia* terminalis; cymae fere sessiles, in fasciculis distantibus verticillatis secus rachem dispositae. *Flores* subsessiles. *Calyx* tubulus, minute 4-dentatus, externe glandifer pubescensque, interne glaber, 1-1.5 (-2) mm longus. *Corolla* cremeo-alba, superne 4-lobata, inferne tubulosa, externe glandifer vel pubescens, tubo interne villosus. *Stamina* breviter exserta, didynamia, epipetala; filamenta filiforma, glabra; anthera plus minusve orbiculata, lobi in dimidio inferiore discreti. *Ovarium* globulosum, glabrum, apice glandiferum; stylus inclusus, filiformis, glaber. *Fructus* globulo-ellipsoideus, glaber, succulentus, rubro-fuscus vel purpureus, 6-8.5 mm longus, 5-6.5 (-7) mm diametro.

Type: R. Pullen 6825, Tavai Creek area, c. 46 miles S.E. of Port Moresby, Central District, Papua New Guinea, 28.iv.1967 (CANB, holotype; A, BISH, BO, BRI, DUH, E, G, K, L, LAE, P, PNH, SING, TNS, UC, US, -isotypes).

Description (Fig. 1)

Shrub or small tree (1.5-) 4-7 (-9) m tall. *Stem*: trunk more or less 7 cm diameter, bark light-brown or fawn-grey, irregularly cracked vertically; young branches glandular and densely pubescent-tomentose. *Leaves* 3-5-foliolate; leaflets almost sessile or with short petiolules, narrowly elliptic or elliptic-lanceolate, with long acuminate apex, cuneate at the base, entire, (3.5-) 5-12 (-17.5) cm long, (2-) 3.5-5 (-6.5) cm broad, chartaceous, light-green and pubescent above, paler and densely tomentose below; pairs of nerves 6-8 (-10); petioles tomentose, glandular, (3-) 4-6.5 (-7.5) cm long; petiolules absent or the terminal one 2-5 (-8) mm long, tomentose, glandular. *Inflorescence* terminal, glandular and tomentose, 16-24 cm long, 14-20 cm wide; cymes sessile or almost so, decussately arranged in distant verticillate clusters along the rachis, each cyme 3-5 (-7) flowered; pedicels densely pubescent-tomentose, glandular, 1-2 (-3) mm long; flowers "fragrant", subsessile; bracts minute, densely glandular and pubescent-tomentose, more or less 1 mm long. *Calyx* tubular, with 4 or rarely 5 minute lobes at the top, glandular and pubescent outside, glabrous inside, persistent, accrescent; tube cylindrical, 1-1.5 (-2) mm long, 1.5-1.7 mm in diameter at the top; lobes obtuse 0.5-0.7 mm long, 1-1.5 mm broad at the base. *Corolla* cream-white, 4-lobed in the upper half, tubular below, glandular and pubescent outside, villous inside the tube and on the inner surface of the large anterior lobe (i.e. lip); tube more or less cylindrical, about twice the length of calyx, glabrous towards the base, 3-4 mm long, 1.5-1.8 (-2) mm in diameter; lobes more or less elliptic-orbicular or elliptic-ovate, obtuse; the anterior lobe largest, developed as a lip, almost orbicular in outline, (2-) 2.5-3.5 mm long, nearly as broad; the other lobes (1.5-) 2-2.5 mm long, 1.5-2.3 (-2.5) mm broad at the base. *Stamens* slightly exerted, didynamous, inserted



Fig. 1. *Viticipremna tomentosa* Munir (A-I, *R. Pullen* 6825: CANB, holotype; *J. R. Pullen* 6911: BRI). A, flowering branch; B, cyme; C, ovary; D, transverse section of ovary; E, flower; F, flower vertically cut open showing androecium and gynoecium; G, calyx showing 4 lobes; H, portion of leaf showing short septate hairs on upper surface; I, portion of leaf showing long septate (tomentose) hairs on the lower surface; J, fruit with persistent calyx.

inside the corolla-tube; filaments filiform, glabrous, villous near the base only, the anterior pair 3-3.5 mm long, the lateral pair 2.5-3 mm long; anthers more or less orbicular in outline, 0.5-1 mm long, 0.5-0.8 mm broad, lobes free and divergent in the lower half, narrowing towards the free end. *Ovary* globular, glabrous, glandular at the top, more or less 1 mm in diameter; style included, filiform, glabrous, 2-2.5 (-3) mm long, stigma minutely 2-fid. *Fruit* succulent, globular-ellipsoid, glabrous, light-green, tinged reddish-brown or purple, 6-8.5 mm long, 5-6.5 (-7) mm in diameter; fruiting calyx accrescent, 5-7 mm in diameter.

Specimens examined

PAPUA NEW GUINEA: *Pullen* 3248, near Kwalimurupu village, Rigo sub-district, Papua, 9.vii.1962 (A, CANB, L, LAE); *Pullen* 6825, Tavai Creek area, c. 74 km S.E. of Port Moresby, Central District, 28.iv.1967 (CANB, holotype; A, BISH, BO, BRI, DUH, E, G, K, L, LAE, P, PNH, SING, TNS, UC, US—iso-types); *Pullen* 6911, between Manugoro and Kapakapa, c. 72.41 km S.E. of Port Moresby, Central District, 5.v.1967 (A, BO, BRI, CANB, E, G, K, L, LAE, PNH, US); *Schodde* 2755, c. 1.6 km N of Rigo, Central District, Papua, 11.viii.1962 (A, BH, BO, BRI, E, G, K, L, LAE, PNH, US); *Streimann NGF 26189*, near Korimurubu Village, Central District, Papua, 5.ii.1966 (A, BISH, BO, BRI, CANB, K, L, LAE, PNH, SING, SYD, UC, US).

Distribution (Map 1)

V. tomentosa seems to be endemic to Papua New Guinea where it is known to occur chiefly to the south-east of Port Moresby. Most of the localities are around Rigo township in the Central district of the country.

Comments

This is the only species of *Viticipremna* with leaves densely tomentose on the lower surface, and cymes almost sessile and arranged decussately in distant verticillate clusters along the rachis.

The calyces are generally 4-lobed at the top, but occasionally a few 5-lobed calyces were also noticed in some collections.

In every mature flower dissected, the style was found to be detached from the ovary, and in most cases missing. After examining a range of flowers from pre-anthesis to post-anthesis stage, it was found that the style is deciduous during anthesis or soon after the opening of its corolla. It appears as if the flowers in this species are self pollinated, and the fertilization apparently takes place just before the opening of the corolla-tube or soon afterwards. In unopened mature flower-buds, the anthers and stigma were found to be fully developed, and in some cases the pollen grains were found attached to the stigma.

Affinities

V. tomentosa is closely related to *V. queenslandica* in its leaflets being tapered at both the ends; calyx distinctly 4-lobed at the top, more or less 2-lipped; style included; stamens almost included or scarcely exserted beyond the corolla-tube; ovary glandular on top. Nevertheless, *V. tomentosa* may readily be identified by its leaflets being densely pubescent-tomentose; cymes sessile, arranged into distant verticillate clusters along the rachis, and the middle lobe of the lower corolla-lip villous on the inner surface.

There are a few characters common between *Viticipremna tomentosa*, *Vitex altissima* L.f. and *Vitex agnus-castus* L. All three have a more or less similar type of inflorescence with sessile cymes arranged into verticillate clusters along the rachis. The latter two, however, can easily be distinguished by their leaflets being sessile, linear, lanceolate or narrowly ovate-lanceolate, glabrous or minutely white-mealy. They can also be recognised by their flower characters which are distinctive of the genus *Vitex*. For the relationship between *Viticipremna tomentosa* and *V. vitilevuensis*, see "affinities" under the latter.

2. Viticipremna queenslandica Munir, sp. nov.

Vitex acuminata auct. non R.Br.: Benth., Fl. Aust. 5 (1870) 67, p.p., quoad spec. *J. Dallachy s.n.*, Rockingham Bay, Qld.

Arbor 15-30 m alta. *Truncus* 30-75 (-100) cm diametro; rami juvenes glabri, glandiferi. *Folia* 3-5-foliolata; foliola elliptico-lanceolata vel elliptico-ovata, acuminata, basi cuneata (4-) 6-13 (-16) cm longa, (2-) 3-4 (-5.5) cm lata, chartacea, glabra, supra nitida, inferne glandifera, petiolo glabro, glandifero, 2.5-7 (-9) cm longo; petioluli (2-) 3-10 (-15) mm longi. *Inflorescentia* terminalis, laxa, glandifera, puberula vel fere glabra; cymae paniculis pyramidalibus dispositae. *Flores* pedicellati; pedicelli glandiferes, 1.5-2.5 (-3) mm longi. *Calyx* tubulus, truncatus vel leviter 4-dentatus, glaber, externe glandulifer. *Corolla* cremeo-alba, superne 4-lobata, inferne tubula, externe pubescentia glanduliferaque; tubus interne villosus. *Stamina* leviter exserta, didynama; filamenta filiforma, glabra; anthera plus minusve circumscriptione orbicularis lobis in dimidio inferiore discretis. *Ovarium* globulum, glabrum, glanduliferum; stylus glaber, filiformis. *Fructus* globulo-ellipsoideus, glaber, aurantiaco-luteus ubi maturus, siccitate brunneus, 6-10 mm longus, 4-7 (-8) mm diametro.

Type: *B. Hyland 9633*, State Forest Reserve 310, Goldsborough L.A., Queensland, Australia, 18.1.1978 (QRS, holotype; AD, QRS, -isotypes).

Description (Fig. 2).

Tree 15-30 m tall. *Stem:* trunk 30-75 (-100) cm in diameter, fluted and buttressed with slightly fissured bark; young branches glabrous, densely covered with yellowish glands. *Leaves* 3-5-foliolate; leaflets narrowly elliptic, elliptic-lanceolate or elliptic-ovate, with acuminate apex, cuneate at the base, entire, (4-) 6-13 (-16) cm long, (2-) 3-4 (-5.5) cm broad, chartaceous, glabrous, with yellowish glands on the lower surface, nitid above, pair of nerves 5-8 (-10); petioles glabrous, glandular, 2.5-7 (-9) cm long; petiolules glabrescent, glandular, (2-) 3-10 (-15) mm long. *Inflorescence* terminal, somewhat lax, glandular, puberulous or almost glabrous, 15-25 cm long, 10-20 cm wide; cymes in more or less pyramidal panicles; lateral primary peduncles 2-5 cm long; flowers pedicellate; pedicels densely glandular, 1.5-2.5 (-3) mm long; bracts minute, glandular. *Calyx* almost truncate or with 4 short lobes at the apex, more or less 2-lipped, glabrous, glandular outside, persistent and somewhat accrescent; tube cylindrical, 2-3 mm long, 1.5-2 mm in diameter at the top; lobes rounded or shortly acute, more or less 0.5 mm long, 0.5-1 mm broad at the base. *Corolla* cream-white, 4-lobed in the upper part, tubular below, pubescent and glandular outside, glandular-puberulous on the inner surface of the lobes, villous inside the tube and throat; tube more or less cylindrical, about twice the length of calyx, glabrous near the base, 4-5 mm long, 2-2.5 mm in diameter; lobes elliptic-oblong, ovate or almost orbicular, obtuse, 2-3 mm long, (1.5-) 2-3 mm broad, the anterior lobe somewhat larger than the others. *Stamens* included or lightly exerted beyond the corolla tube, (included in *B. Hyland 9251*), didynamous, inserted in the lower half of the corolla-tube; filaments filiform, glabrous above, villous in the lower half, the anterior pair longer, 3.5-4.5 mm long, (more or less 0.7 mm long in *B. Hyland 9251*), the lateral pair 3-4 mm long, (more or less 0.5 mm long in *B. Hyland 9251*); anthers more or less orbicular in outline, lobes free and divergent in the lower half, narrowing towards the free end, more or less 1 mm long, and 0.5 mm broad, (more or less 0.5 mm long in *B. Hyland 9251*). *Ovary* globular, glabrous, glandular at the top, 1-1.2 mm in diameter; style almost included, glabrous, filiform, 3-3.5 mm long, (exserted and more or less 4 mm long in *B. Hyland 9251*); stigma minutely 2-fid. *Fruit* almost globular or ellipsoid, glabrous, "orange-yellow" when ripe, drying brownish, 6-10 mm long, 4-7 (-8) mm in diameter.

Representative specimens (Collections seen: Australian 35, non-Australian 0).

AUSTRALIA: QUEENSLAND: *Cowley 73a*, Cook district, undated (BRI, 2 spec.). *Dallachy s.n.*, Rockingham Bay, 27.ii.1865 (K, MEL 97905, MEL 97910). *Dockrill 18*, Yungaburra, 22.iv.1971 (BRI, L, QRS). *Dockrill 746*, Table Range, Dead Horse Creek, 23.x.1973 (QRS). *Francis s.n.*, Atherton Tableland, 5.v.1928 (BRI). *Gray 1220*, S.F.R.933, Little Pine L.A., 16° 59' S, 145° 50' E, 20.xii.1978 (AD, QRS 2 spec.). *Gray 2439*, S.F.R. 191, 17° 19' S, 145° 30' E, 22.ii.1982 (QRS). *Gray 2515*, S.F.R.191, 17° 18' E, 145° 30' E, 30.iii.1982 (QRS, 2 spec.). *Gray 2529*, S.F.R. 191, loc. cit., 15.iv.1982 (QRS 2 spec.). *Hyland 1067*, Noah Creek, 11.x.1967 (QRS). *Hyland 1536*, Wywuri



Fig. 2. *Viticipremna queenslandica* Munir (A-H, B. Hyland 9633: AD, isotype; I, K.J. White s.n.: BRI 219424). A, flowering branch; B, enlarged portion of leaf showing glands on the lower surface; C, cyme; D, flower; E, calyx; F, flower vertically cut open to show androecium and gynoecium; G, ovary; H, transverse section of ovary; I, fruit with persistent calyx.

Holding, 26.vi.1968 (QRS). *Hyland 5487*, Rocky River, 14.ix.1971 (L, QRS). *Hyland 9251*, S.F.R. 675, East Mulgrave L.A., 22.xii.1976 (BRI, L, QRS—specimens with abnormal stamens and style). *Hyland 9633*, S.F.R. 310, Goldsborough L.A., 18.i.1978 (QRS, holotype; AD, QRS, —isotypes). *Jones 676*, Wongabel, 5 miles S. of Atherton, 3.ix.1957 (JCT). *Jones S2440*, Atherton, 30.iv.1959 (JCT). *Nicholson s.n.*, Tolga Scrub, -iv.1970 (QRS). *Risley 432*, State Forest Reserve, 933, 1.ii.1978 (QRS). *Sanderson 1459*, State Forest Reserve 185, Townsville, 24.v.1978 (QRS). *Smith 3796*, Cook, 17° 20'S, 145° 28'E, 18.viii.1948 (QRS). *Unwin 246*, S.F.R. 310, Gadgarra, 24.iii.1977 (QRS). *Unwin 569*, C.S.I.R.O. Plot, Palmerston Highway, Innisfail, 28.vi.1978 (QRS). *White s.n.*, Cook District, R.310, 17° 01'S, 145° 04'E, 18.vi.1953 (BRI, L). The following two collections by L.J. Webb & J.G. Tracey lack flowers or fruits, but seem to belong to this species: *Webb & Tracey 7368*, McIlwraith Range, NE of Coen, 1962 (BRI, CANB). *Webb & Tracey 12096*, Timber Camp Rd on road between Daintree & Bloomfield Rd, via China Camp, 24.viii.1972 (BRI, CANB).

Distribution (Map 1).

V. queenslandica is endemic to Australia where the main distribution is in the north-eastern coastal region of Queensland. Within this area, it occurs chiefly between latitudes 16° and 19°S, and longitude 145° and 147°E. Most localities are on the coastal area of the Atherton Tableland between Mossman and Rockingham Bay. Outside the above distribution area, only one collection from Cape York Peninsula has come from north-east of Coen in the McIlwraith Range.

Comments

This species is the only known representative of *Viticipremna* in Australia. Previously, it had been misidentified as *Vitex acuminata* R.Br. which has more or less similar leaves and inflorescence. The latter, however, may easily be distinguished by its corolla being distinctly 5-lobed, calyx pubescent outside and stamens and style much more exerted beyond the corolla-tube.

B. Hyland's collection no. 9251 (QRS) seems to have abnormal stamens and style. The stamens in his collection are relatively much smaller and completely included, and the style somewhat more exerted. In all other characters, however, this collection fits well within the species.

The adult leaflets are entire, but at seedling stage almost all leaflets are deeply dentate. Similarly dentate-margined leaflets are also found in the seedlings of *Vitex glabrata* R.Br.

Affinities

V. queenslandica is closely allied to *V. philippinensis* in its leaflets being glabrous, tapered at both ends; cymes pedunculate, arranged in more or less pyramidal panicles; corolla pubescent and glandular outside. Nevertheless, *V. queenslandica* can easily be distinguished by its branchlets and inflorescence being glabrous, densely covered with yellowish glands; calyx is glabrous but glandular outside, 4-toothed at the top, more or less 2-lipped; stamens and style almost included or slightly exerted above the corolla-tube, and ovary glandular on top.

V. queenslandica is also related to *V. tomentosa* and *V. vitilevuensis*. For details see "affinities" under these species.

3. *Viticipremna vitilevuensis* Munir, sp. nov..

Vitex quinata (Lour.) F.N. Will. var. *puberula* (H.J. Lam) Mold., *Phytologia* 3 (1951) 489, p.p., quoad spec. *A.C. Smith 4307 & 6295* from Viti Levu, Fiji; *Phytologia* 49 (1981) 457-459, p.p., quoad spec. *W. Greenwood 344A* from Viti Levu, Fiji.

Vitex turczaninowii Merr. f. *puberula* (H.J. Lam) Mold., *Phytologia* 51, No. 2 (1982) 163, p.p., quoad spec. in Herb. A & US.

Arbor 15-20 m alta. *Truncus* cylindricus, cortice fissura, ramis juvenibus puberulis glandiferisque. *Folia* 3-5-foliolata; foliola elliptico-lanceolata, integra, acuminata, basin versus cuneata, 5-16 cm longa, 2.5-8.5 cm lata,



Fig. 3. *Viticipremna vitilevuensis* Munir (A-G, *A.C. Smith 8881*: L, holotype; H, *A.C. Smith 4307*: L). A, flowering branch; B, cyme; C, flower; D, flower vertically cut open showing androecium (partly obscured by hairs) and gynoecium; E, enlarged calyx; F, ovary; G, transverse section of ovary; H, fruit with persistent calyx.

chartacea, glabra, dorsaliter glandifera; petioli (0.5-) 1-2.5 cm longi. *Inflorescentia* terminalis, glandifera, puberula; cymae paniculatae, plus minusve pyramidales; pedicelli 1-2 mm longi. *Calyx* tubulus, fere truncatus, externe pubescens glandiferaque, interne glaber, 1.5-2.5 mm longus. *Corolla* superne 4-lobata, inferne tubula, externe pubescens glandiferaque, in tubo et lobi anterioris superficie villosa; tubus vix magis longus quam calyx; lobi plus minusve elliptico-orbiculares. *Stamina* inclusa, plus minusve didynamia; filamenta usque 1.5 mm longa; antherae plus minusve 0.5 mm longae. *Ovarium* globulosum, glabrum, glandiferum; stylus inclusus glaber, filiformis, 2.5-3 mm longus. *Fructus* globosus, glaber, 4-5 mm longus, fere quam latus.

Type: A.C. Smith 8881, Namosi, hills bordering Wainavindrau Creek, in vicinity of Wainimakutu, alt. 150-250 m., Namosi, Viti Levu, Fiji, 17.ix-8.x.1953 (L, holotype; A, BISH, US—isotypes).

Description (Fig. 3)

Tree 15-20 m tall. *Stem* cylindrical, glabrous, with slightly fissured bark; young branches puberulous, densely covered with minute yellowish glands. *Leaves* 3-5-foliolate; leaflets narrowly elliptic or elliptic-lanceolate, with acuminate apex, cuneate towards the base, entire, (5-) 7-12 (-16) cm long, (2.5-) 4-7 (-8.5) cm broad, chartaceous, glabrous, with yellowish glands on the lower surface, nitid above, pair of nerves 6-10; petioles puberulous, glandular, but becoming glabrescent, (3-) 4-10 cm long; petiolules puberulous, glandular, (0.5-) 1-1.5 (-2.5) cm long. *Inflorescence* terminal, glandular, puberulous, 11-30 cm long, 10-15 cm wide; cymes in more or less pyramidal panicles; lateral peduncles 2-6 cm long; flowers "fragrant"; pedicels glandular, pubescent, 1-2 mm long; bracts minute, linear, glandular and pubescent. *Calyx* tubular, almost truncate or with 4 minute teeth at the apex, pubescent and glandular outside, glabrous within; tube cylindrical, 1.5-2.5 mm long, 1.5-2 mm in diameter at the top; lobes scarcely 0.5 mm long, 0.5-1 mm broad at the base. *Corolla* "white, purple tinged within at throat", 4-lobed above, tubular below, pubescent and glandular outside, glandular-puberulous on the inner surface of the lobes, villous inside the tube and throat with hairs extending to the inner surface of the anterior lobes; tube more or less cylindrical, scarcely longer than calyx, glabrous near the base, 2-2.5 (-3) mm long, 1.5-2 (-2.5) mm in diameter; lobes broadly elliptic or almost orbicular, anterior lobe larger than the others, (2-) 2.5-3 (-4) mm long, 2.5-3 (-3.5) mm broad, densely villous-pubescent on the inside, other lobes broadly elliptic or almost orbicular in outline, 2-2.5 mm long, 2-2.5 (-3.5) mm broad. *Stamens* included, more or less didynamous, inserted in the middle of the corolla-tube; filaments filiform, glabrous in the upper half, villous near the base, anterior pair (1-) 1.2-1.5 mm long, lateral pair 0.8-1 mm long; anthers elliptic-oblong, more or less 0.5 mm long. *Ovary* globular, glabrous, glandular on top, 1-1.5 mm in diameter; style included, glabrous, filiform, 2.5-3 mm long, stigma shortly bifid. *Fruit* globose, glabrous, 4-5mm long, nearly as much in diameter.

Specimens examined

FIJI: VITI LEVU: *Degener 14481*, Tholo North, vicinity of Nandarivatu 750-900 m, 4.ii-26.iii.1941 (A, NY). *Greenwood 344A*, Lautoka, mountains, alt about 550 m, ii-iii.1941 (A). *Gillespie 2953*, Namuamua, Namosi Prov., 22.ix.1927 (NY); *Gillespie 4164.1*, Tholo-North Prov., 3.xii.1927 (NY). *Smith 6295*, Mba, slopes of the escarpment north of Nandarivatu, alt. 550-800 m, 15-29.ix.1947 (A, BISH, L, NY, US); *Smith 8881*, Namosi, hills bordering Wainavindrau Creek, in vicinity of Wainimakutu, alt. 150-250 m, 17.ix-8.x.1953 (L, holotype; A, BISH, US, — isotypes). *A.C. Smith 9119*, Serua, hills east of Navua River, near Nukusere, alt. 100-200 m, 29.x-2.xi.1953 (A, BISH, L, US); *Smith 4307*, Mba, vicinity of Nalotawa, eastern base of Mt Evans Range, alt. 550-600 m, 28.iv-17.v.1947 (A, BISH, L, US).

Distribution (Map 1)

V. vitilevuensis seems to be endemic to Fiji where it is known to occur on the Viti Levu Island. Further exploration is likely to expand its range of distribution to the neighbouring islands.

Comments

This species is the only known representative of *Viticipremna* in Fiji. Previously it has been misidentified and distributed in some herbaria as *Vitex quinata* var. *puberula*. The latter has more or less similar looking leaves and inflorescence, but may easily be identified by its calyx being shortly but distinctly 5-toothed; corolla 5-lobed, with tube about twice the length of calyx, lobes glabrous (not villous-pubescent) on the inner surface; stamens and style exserted. The occurrence of *Vitex quinata* var. *puberula* in Fiji was apparently based by Moldenke on some of A.C. Smith's collections cited here. Otherwise, this taxon has not been recorded from Fiji in any available flora of that region.

The present species was first recorded by Moldenke (1951) as *Vitex quinata* var. *puberula*. Subsequently, when Moldenke (1982, 1982A, 1982B) regarded the genus *Viticipremna* synonymous to *Vitex*, he renamed this species as *Vitex turczaninowii* f. *puberula* (H.J. Lam) Mold. In both places, the basionym for the variety and/or forma was *Vitex heterophylla* Roxb. var. *puberula* H.J. Lam (1919). The syntypes of Lam's variety did not include specimens from Fiji, and such specimens were wrongly identified by Moldenke as variety or forma *puberula*. They are now described here as a separate species. Although Moldenke (1982A) did not cite any specimen, it is clear from his identification on the herbarium sheets that he mistakenly included the Fijian elements in the forma *puberula*.

Affinities

As mentioned in key characters, *V. vitilevuensis* is closely related to *V. queenslandica*. Nevertheless, *V. vitilevuensis* may easily be distinguished by its calyx being truncate and pubescent outside, corolla-tube scarcely longer than calyx, anterior corolla lobe villous on the inner surface, stamens and style completely included, filaments up to 1.5mm long and anthers more or less 0.5 mm long. The stamen size is about half that of *V. queenslandica*.

V. vitilevuensis is also allied to *V. tomentosa* in its calyx being pubescent and glandular outside, anterior corolla lobe villous on the inner surface, ovary glandular and style included. However, *V. tomentosa* can readily be identified by its leaves being densely pubescent-tomentose; cymes sessile, arranged in distant verticillate clusters; calyx distinctly 4-lobed; corolla-tube twice the length of calyx, and filaments 2.5-3.5 mm long.

4. *Viticipremna philippinensis* (Turcz.) H.J. Lam, Bull. Jard. Bot. Buitenz. 3, 3 (1921) 47; Mold., Résumé Verben. etc. (1959) 185, 191, 339, 382, 390, 391; Fifth Summary Verben. etc. 1 & 2 (1971) 319, 329, 610, 716, 730, 732; Sixth Summary Verben. etc. (1980) 309, 319, 410; Phytologia 50, No. 4 (1982) 253, 267, 270.

Lectotype: Cuming 1294, Insulae Philippinae, 1841 (MEL, lectotype designated here; BM!, K—2 spec.!, NY! PNH n.v., —isolectotypes).

Premna philippinensis Turcz., Bull. Soc. Nat. Mosc. 36 (1863) 215, basionym.

Type: Cuming 1294, Insulae Philippinae, 1841 (BM!, K!, MEL!, NY!, PNH n.v., —syntypes). *Cuming 1172*, loc.cit., possibly 1841 (NY photo!, PNH n.v., syntype. Perhaps destroyed during the war). No other specimen of this collection was available for examination).

Gumira philippinensis (Turcz.) Kuntze, Rev. Gen. Pl. 2 (1891) 508.

Type: As for Premna philippinensis Turcz.

Vitex turczaninowii Merr. in Govt Lab. Philip. 35 (1906) 77; Philip. J. Sc. I, Suppl. 1 (1906) 121; Enum. Philip. Fl. Pl. 3 (1923) 397; Mold., Phytologia 49, No. 5 (1981) 457; Phytologia 50, No. 4 (1982) 253, 267, 270; Phytologia 51, No. 4 (1982) 274, in obs.

Type: As for Premna philippinensis Turcz.

Viticipremna turczaninowii (Merr.) H.J. Lam, Verben. Malay. Archip. (1919) 162.

Type: As for *Premna philippinensis* Turcz.

Typification

V. philippinensis is based on H. Cuming's collection nos 1172 and 1294 from the Philippines. Since the original author (N. Turczaninow) did not choose a holotype, it is, therefore, desirable to select a lectotype for this name. Of all the available syntypes, a duplicate of *Cuming 1294* in Herb. MEL is particularly complete and well preserved, and is, selected here as the lectotype for this species.

Description (Fig. 4)

Shrub or small tree "9-28" m tall (see Comments). *Stem*: trunk with bark rather fluted, grey, soft-barked; branchlets quadrangular, minutely ferruginous-puberulous. *Leaves* 3-6 (-7)-foliolate; leaflets petiolulate, lanceolate to narrowly elliptic-lanceolate, entire, with long acuminate apex, cuneate at the base, (6-) 8-15 (-17) cm long, (2.5-) 3-6 (-7.5) cm broad, chartaceous, glabrous, with some little scales above and reddish-brown glands beneath; pairs of nerves (7-) 8-12; petioles minutely ferruginous-puberulous, 5-11 cm long; petiolules minutely ferruginous-puberulous, (0.5-) 1-2.5 (-3) cm long. *Inflorescence* terminal, ferruginous-puberulous, 12-25 cm long, 15-30 cm wide; cymes pedunculate, arranged in more or less pyramidal panicles; lateral primary peduncles 2.5-6 cm long; pedicels densely ferruginous-pubescent, glandular, (1-) 2-4 (-5) mm long; bracts minute, caducous. *Calyx* tubular, cylindrical, truncate, glandular and densely ferruginous-pubescent outside; glabrous inside, 2-3 mm long, 1.5-2 mm in diameter at the top, persistent and accrescent in fruit. *Corolla* pale-yellow, 4-lobed in the upper half, tubular below, densely glandular and puberulous outside except the margins of the lobes, villous inside the tube near the insertion of the stamens; tube cylindrical, about twice the length of calyx, glabrous in the lower part, 3.5-5 mm long, 1.5-2.5 (-3) mm in diameter; lobes broadly elliptic-ovate or elliptic-oblong, obtuse, 2-4 (-5) mm long, 1.5-2 (-3) mm broad, the anterior lobe somewhat larger than the others. *Stamens* much exserted, didynamous, inserted in the middle part of the corolla-tube; filaments filiform, glabrous, somewhat villous at the base, the anterior pair longer, 5-9 mm long, the lateral pair 4-7 (-8) mm long; anthers more or less elliptic-oblong in outline, lobes oblong, free and divergent in the lower half, more or less 1 mm long, 0.5 mm broad. *Ovary* globular or broadly pyriform, glabrous, 1-1.5 mm in diameter; style much exserted beyond the corolla-lobes, glabrous, filiform, 6-11 mm long; stigma distinctly 2-fid. *Fruit* globular-ellipsoid or somewhat pyriform, glabrous, 5-7 mm long, 5-6 mm in diameter; persistent calyx expanding to (5-) 6 mm in diameter.

Specimens examined

PAPUA NEW GUINEA: *Pajmans 225*, Lower Morehead River at Long. 141° 30'E, Western District, Papua, 13.viii.1967 (CANB, LAE). *Pajmans 418*, Agu River branch of the middle Fly River at Lat. 07° 04'S, Western District, Puaa, 2.x.1967 (CANB). *Pullen 7524*, Morehead River at Long. 141° 30'E, Western District, Papua, 14.viii.1967 (CANB).

INDONESIA: IRIAN JAYA: *Koster B.W. 1121*, Res. Ransiki Oransbari, 23.ix.1955 (BRI, CANB, L). *Kostermans 274*, Manokwari, 20.viii.1948 (BO, BRI, L, LAE). *Schram B.W. 1965*, loc. cit., 19.x.1955 (CANB, L). MOLUCCAS: *Tangkilisan 200*, Morotai, Tobelo, North Totodokoe primary forest, 10.vi.1949 (BO, BRI, L, LAE).

PHILIPPINES: *Ahern FB 1127 & 2961*, Province of Rizal, Luzon, iv.1905 (BO, K, NY, PNH n.v.); *Alambra & Borromeo FB25884*, Bataan Prov., Luzon, -vii.1916 (A, BRI, GH). *Bartlett 15339 & 15374*, Kay Ungulan, near Teresa, Rizal Province, Luzon, 18.viii.1935 (A, PNH). *Bawan FB24194*, Bataan Prov. Luzon, -v.1915(A). *Canicosa s.n.*, Mt Makiling, Laguna Prov. Luzon, 10.v.1949 (PNH 9705). *Clemens s.n.*, Camp Keithley, Lake Lanao, Mindanao, vi.1907 (BO, PNH n.v.). *Clemens s.n.*, loc. cit., vii.1907 (BO—2 spec., PNH n.v.). *Conklin 333*, Mt Yagaw, Mindoro, 5.viii.1953 (A, L, PNH 18634; *Cuming 1173*, loc. incert., perhaps near Manila, 1841 (A, BM, K, MEL). *Cuming 1294*, loc. cit., 1841 (BM, K—2 spec., MEL, NY, PNH n.v., —syntypes). *Curran FB 5837*, Zambales Prov., Luzon, -i.1907 (BR, PNH n.v.). *Curran FB 10639*, Camarines Prov., Luzon, vi.1908 (BR, BRI, PNH n.v.). *Curran FB 10505*, Sorsogon Prov., vi.1908 (BR). *Merrill & Darling FB 94049*, Prov. of Ilocos Sur, Luzon, -xi.1908 (PNH). *Elmer 16693*, Mt Bulusan, Sorsogon Prov., vii.1916 (A, BM, BO, K, NY, PNH). *Penas FB26677*, Cagayan Prov., Luzon, -v.1917

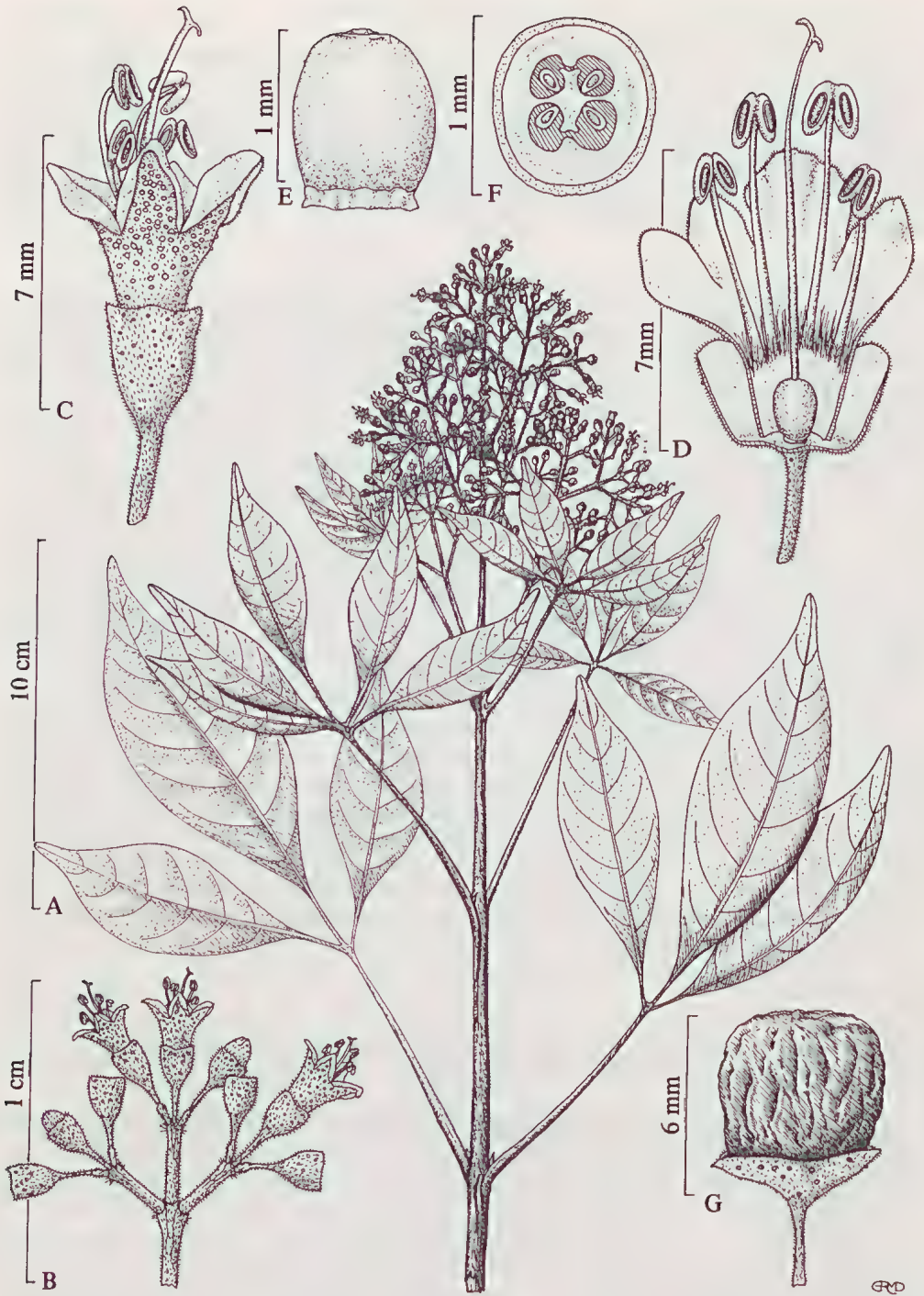


Fig. 4. *Viticipremna philippinensis* (Turcz.) H.J. Lam (A-F, *Cuming 1294*: MEL, lectotype; G, *C.A. Wenzel 3430*: BR). A, flowering branch; B, cyme; C, flower; D, flower vertically cut open showing androecium and gynoecium; E, ovary; F, transverse section of ovary; G, fruit with persistent calyx.

(A, PNH). *Ramos* 382, Antipolo Prov., Rizal, -vi.1910 (PNH, Z—2 spec.). *Merrill* 2839, Bosoboso, Rizal Prov., vii.1903 (K, PNH); *Ramos* 1410, Morong, Rizal Prov., Luzon 1906 (BO, GH, K, PNH). *Ramos & Edano* BS45318, Casiguran, Tayabas Province, Luzone, v-vi.1925 (BO, NY, PNH n.v.). *Quisumbing & Rosario* s.n., Calayan Island, -v.1961 (PNH). *Sulit* 1626, Mt Makling, Laguna Prov., Luzon, 12.v.1947 (A, PNH). *Sulit & Conklin* PNH 17715, Mt Yagaw, Mindoro Island, v-vi.1953 (A, BM, L, PNH). *Wenzel* 2760, Suringao, 1.vi.1927 (B). *Wenzel* 2563, Surigao, 25.vi.1927 (BR, NY). *Wenzel* 3430, loc. cit., 25.vii.1928 (BR, NY). *Wenzel* 809, Leyte Island, 1.vi.1914 (A, BM). *Wenzel* 966, loc. cit. 1.vii.1914 (A, BM). *Wenzel* 1333, loc. cit. 2.v.1915 (A, BM). *Wenzel* 1399, loc.cit. 30.v.1915 (A, BM, NY). *Wenzel* 2523, Surigao, 9.iv.1927 (NY).

Distribution (Map 1)

V. philippinensis is known to occur in Papua New Guinea, Indonesia and the Philippines. In Papua New Guinea, this species is recorded from the Western District of Papua along the southern part of the Morehead River and the Fly River. Distribution in Indonesia is in the north-western part of Irian Jaya around Manokwari, and on Morotai Island in the Moluccas. In the Philippines, it has been collected from Calayan, Leyte and Mindoro Islands, and several places on Luzone and Mindanao Islands. In addition to the above localities, Moldenke (1959, 1971, 1980) and Merrill (1923) have recorded it from Batan and Ticae Islands in the Philippines. Moldenke (1959, 1971, 1980) has also reported its occurrence in Java, Indonesia. In *Phytologia* Memoirs II, Moldenke (1980) also recorded it from Kalimantan formerly, Dutch Borneo.

Comments

Merrill (1906) regarded *Premna philippinensis* Turcz. as belonging to the genus *Vitex*, and gave it a new name *Vitex turczaninowii*. He did not base it on *P. philippinensis* Turcz. because the epithet *philippinensis* was already occupied for a different species of *Vitex*. Nevertheless, he cited both the types of *P. philippinensis* and seven other collections under *Vitex turczaninowii* Merr. About the types, Merrill (1906) said that "this species which belongs in *Vitex*, rather than in *Premna*, was based on Nos 1172 and 1294 of Cuming's Philippine collection, both these numbers being represented in the herbarium of this Bureau". During the present investigation, however, no duplicates of these numbers were found in the herbarium of the Bureau, presently the Philippine National Herbarium (PNH). It seems as if they were possibly destroyed in the war. In the same place, Merrill (1906) also mentioned that "in addition to the two numbers of Cuming's Philippine collection referred by Turczaninow to this species, it is apparently well represented also by No. 1173 Cuming, and . . ." In 1951, Merrill annotated Cuming's 1173 in the BM as the type of *Viticipremna philippinensis* (Turcz.) H.J. Lam. Actually, Turczaninow (1863) did not cite in the protologue Cuming's No. 1173, therefore, it should not be regarded as a type. Merrill's determinavit label gave the impression that he lately accepted the genus *Viticipremna*, but he made a mistake in labelling *Cuming* 1173 as the type. During present studies, Cuming's 1172 and 1173 were found to be fairly identical collections of the same species. It is very likely that they may have been gathered simultaneously from the same plant, but as no. 1173 was not mentioned in the original description the specimen cannot be regarded as a type.

Several collections of this species have been identified by others as *Vitex quinata* (Lour.) F.N. Will. It is sometimes rather difficult to distinguish between these two species without critically examining their flowers.

The height of this species was given for only two collections. Therefore, the range of height mentioned in the present description may not be accurate.

Affinities

V. philippinensis is closely related to *V. novae-pommeraniae* in its branchlets and inflorescence being shortly ferruginous-pubescent, calyx glandular and densely pubescent outside, stamens and style much exserted above the corolla-lobes; ovary not glandular. However, *V. philippinensis* may readily be distinguished by the key characters. *V. philippinensis* is also related to *V. queenslandica* in having more or less similarly shaped leaves and inflorescence. For distinguishing characters, see "affinities" under the latter.

5. *Viticipremna novae-pommeraniae* (Warb.) H.J. Lam, Verben. Malay. Archip. (1919) 163; Bull. Jard. Bot. Buitenz 3, 3 (1921) 47; Mold., Résumé Verben. etc. (1959) 202, 204, 387; Fifth Summary Verben. etc. 1 & 2 (1971) 338, 340, 724, 732; Phytologia 31, No. 5 (1975) 391; Sixth Summary Verben. etc. (1980) 328, 329, 368, 460; Phytologia 50, No. 4 (1982) 255, 267, 270.

Lectotype: O. Warburg 21140, in the ravines of Raluan on the Gazelle-Peninsula of Neu Pommern (New Britain), iv-vi.1889 (A, lectotype designated here; BM, B n.v.—isolectotypes).

Vitex novae-pommeraniae Warb., Engl. Bot. Jahrb. 13 (1891) 429, *basionym*; Schumann & Lauterb., Fl.D. Südsee (1901) 524; Mold., Phytologia 50, No. 4 (1982) 255, 267, 270.

Type: As for *Viticipremna novae-pommeraniae* (Warb.) H.J. Lam.

Clerodendron novae-pommeraniae (Warb.) Schumann, Fl. Neu Pomm. (1898) 145, based on *Vitex novae-pommeraniae* Warb.; Mold., Résumé Verben. etc. (1959) 204; Fifth Summary Verben.etc. 1 (1971) 339, 452; Sixth Summary Verben. etc. (1980) 329, *syn. nov.*

Type: As for *Viticipremna novae-pommeraniae* (Warb.) H.J. Lam.

Vitex quinata var. *puberula* (H.J. Lam) Mold., Phytologia 49, No. 5 (1981) 458-459, p.p., quoad spec. *Conn & Katik LAE 66035*.

Typification

V. novae-pommeraniae is based on O. Warburg's collection no. 21140 from New Britain. Since Warburg did not choose a holotype, it is desirable to select a lectotype for this name. Of all the available syntypes, a duplicate in Herb. A is found to be particularly complete and well preserved. It is, therefore, selected here as the lectotype for this species.

Description (Fig. 5)

Tall shrub or tree, (7.5) 12-27 (-33.5) m tall. *Stem*: trunk with outer bark light grey-brown, peeling in vertical strips, bole 6-15 m high, (12-) 20-76 (-120) cm in diameter at breast height; branchlets quadrangular, minutely ferruginous-pubescent. *Leaves* 4-5-foliolate, sometimes 3-foliolate; leaflets palmately arranged, petioluled, ovate, ovate-oblong or ovate-lanceolate, entire, with narrow acuminate apex, unequally obtuse or subtruncate at the base, rarely cuneate, (4-) 6-13 (-18) cm long, (2.5-) 3.5-5.5 (-9) cm broad, thinly chartaceous, glabrous excepting some hairs on and near the midrib; pairs of nerves 8-11; petioles minutely ferruginous-pubescent, (3-) 5-12 (-19) cm long; petiolules minutely ferruginous-pubescent, the lower two 0.2-1 cm long, the remaining (i.e. the upper) 1-2.5 (-3.5) cm long, the terminal petiolule always the longest. *Inflorescence* terminal, ferruginous-tomentose, 8-20 (-30) cm long, 6-15 (-22) cm wide; cymes pedunculate, di- or trichotomously branched, arranged in more or less pyramidal panicles; the basal lateral primary peduncles (3-) 4-6 (-8) cm long; flowers shortly pedicellate; pedicels densely ferruginous-pubescent, glandular, 1-3 (-4) mm long; bracts minute, caducous. *Calyx* tubular or cup-shaped, cylindrical, truncate, glandular and densely pubescent outside,



Fig. 5. *Viticipremna novae-pommeraniae* (Warb.) H.J. Lam (A-G, Henty, Coode & Cropley NGF 29143: NSW). A, flowering branch; B, cyme; C, flower; D, flower vertically cut open showing androecium and gynoecium; E, ovary; F, transverse section of ovary; G, fruit with persistent calyx.

glabrous inside, 2.5-3 mm long, 2-2.5 mm in diameter at the top, persistent and accrescent in fruit, expanding to 7 mm in diameter. *Corolla* creamy or pale-yellow, with purple streaks on the lower lip and inside the throat, somewhat 2-lipped, 4-lobed in the upper half, tubular below, glandular and densely fulvous-pubescent outside excepting the lower half of the tube and the margins of the middle-lobe of the lower lip, villous inside in the upper part of the tube and at base of the middle lobe of the lower lip; tube more or less cylindrical, about twice the length of calyx, glabrous in the lower half, 4.5-6 mm long, 2.5-3 mm in diameter at the top; lower lip 3-lobed, lobes subequal, with the middle lobe somewhat larger than the others, narrowly elliptic-oblong, obtuse, (2-) 2.5-3 (-4.5) mm long, 1.5-2 (-3) mm broad; upper lip usually entire, sometimes more or less 2-lobed, elliptic-orbicular or broadly elliptic-ovate, 3-3.5 (-4) mm long, 2.5-3.5 mm broad. *Stamens* much exerted, didynamous, inserted in the upper part of the corolla-tube; filaments filiform, glabrous excepting a few villous hairs near the base, the anterior pair longer, 6-7 mm long, the lateral pair 5-6 mm long; anthers more or less elliptic-oblong in outline, lobes oblong, free and divergent in the lower half, more or less 1 mm long, 0.5 mm broad. *Ovary* globular-obovoid, glabrous, 1.5-2 mm long, 1.3-1.5 mm broad; style much exerted beyond the corolla-lobes, glabrous, filiform, 9-10 mm long, stigma unequally 2-fid. *Fruit* globose to obovoid, glabrous, 5-9 mm long, 5-8 mm in diameter, green when immature, purple-black when ripe, turning black on drying.

Specimens examined

PAPUA NEW GUINEA: *Conn & Katik LAE 66035*, Sisilia River area, subdist. Finschhafen-Umboi Isl. dist. Morobe, 27.ix.1974(A, BISH, CANB, E, K, L, LAE, M, PNH, QRS, SYD, US). *Coode, Cropley & Katik NGF 29610*, c. 26 miles from Kavieng, New Ireland, 24.i.1967 (CANB, K, L, LAE). *Coode, Sands & Lelean NGF 46112*, c. 8 miles inland, Namatanai Sub-dist., New Ireland, 11.ii.1970 (CANB, K, L, LAE). *Floyd 6646*, Keravat, New Britain, 28.xii.1954 (A, BM—2 spec., BRI, K, LAE, MEL, NSW—2 spec.). *Hartley TGH 10082*, Bewapi Creek, c. 4 miles W of Lae, 28.iii.1962 (BRI, CANB, LAE). *Hartley TGH 11350*, between Busu and Butibum Rivers, c. 10 miles N of Lae, 4.iii.1963 (BRI, CANB, LAE). *Hartley TGH 11350A*, Lae Botanic Gardens, 5.viii.1964 (BRI, CANB, LAE). *Havel & Kairo NGF 17325*, Gnalang Gumbum, Lae Subdist., 20.xi.1962 (A, BO, BRI, CANB, K, L, LAE, SING). *Hellwig 390*, near Butaveng, 8.iii.1889 (K). *Henty, Coode & Cropley NGF 29143*, Busu River, near Lae, Morobe Dist., 21.xii.1966 (A, BO, BISH, BRI, CANB, K, L, LAE, NSW, SING). *Hepplethwaite NGF 546*, Los Negros Island, Manus dist., Admiralty Islands, -ii.1945 (A, BRI, LAE). *Mair NGF 1852*, Jacquinto Bay, New Britain, -iv.1945 (A, BRI—2 spec., CANB, K, LAE, NSW). *Millar NGF 9782*, Lae Botanic Gardens, Morobe Dist., 30.i.1959 (A, BRI, K, LAE, NSW). *Womersley NGF 19135*, Gnalangumbum, 6 miles N of Lae, Morobe Dist., 11.ii.1964 (A, BISH, BO, BRI, CANB, K, L, LAE, NSW, PNH, SING, UH, US). *Womersley NGF 37105*, Sankwep Ridge near Busu, Lae Subdist., 22.xi.1967 (A, BISH, BO, BRI, CANB, K, L, LAE, NSW, PNH, SING). *Womersley & McEwin NGF 37425*, Sankwep logging area, Lae Subdist., 9.i.1969 (A, BO, BRI, CANB, K, L, LAE).

Distribution (Map 1)

V. novae-pommeraniae is endemic to Papua New Guinea where it has been recorded from the north-eastern part of the country. On the mainland, it is known to occur around the township of Lae, and outside it is reported from Admiralty Island, Bismarck Islands, New Britain and New Ireland.

Comments

A collection by Henty, Coode & Cropley (no. NGF 29143) has a few flowers with the upper corolla-lip somewhat 2-fid or shortly 2-lobed at the top. Most flowers of this collection, however, have an undivided upper corolla-lip. The short division in the upper corolla-lip may be another indication of its close relationship with *Vitex* in which the upper corolla-lip is often distinctly 2-lobed.

The ovary is generally glabrous and non-glandular but in the collection by Coode, Cropley & Katik (no. NGF 29610), a few scattered yellow glands are found on some ovaries. These glands seem to disappear in more mature ovaries or at least in the fruiting stage.

Moldenke (1959, 1971, 1980) recorded this species from Irian Jaya, Indonesia. During present investigation, however, the occurrence of this species in any part of Indonesia has not been confirmed.

According to collector's notes this is found chiefly in the logging areas of lowland forests. It is also grown at Lae Botanic Gardens in New Guinea.

The specimen with the largest organs was collected by K. Mair (no. NGF 1851) from New Britain. It has leaflets 18 cm by 9 cm, petioles up to 19cm, petiolules up to 3.5cm and inflorescence 30 cm by 22 cm in outline.

Affinities

V. novae-pommeraniae is closely related to *V. philippinensis*. For detail see "affinities" under the latter.

Warburg (1891), who originally described it as a *Vitex* species, considered it closely related to *Vitex acuminata* but distinguished it by the size and form of the leaves, length of petiolules, size of the fruit and the tomentum of the fruiting calyx. The leaflets in *V. acuminata*, however, are much thinner and cuneate towards the base, petiolules glabrous, fruit somewhat larger and calyx-tube toothed at the top and without glands outside. *V. novae-pommeraniae* has also been confused with *Vitex quinata* from which it may easily be distinguished by its leaflets being unequally obtuse or subtruncate at the base, calyx-tube truncate, corolla mainly 4-lobed and ovary non-glandular.

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